

10/539627

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## SEQUENCE LISTING

5 <110> IPF PharmaCeuticals GmbH

<120> Peptides and their use for the treatment of HIV  
infections

<130> 032873wo ME/BM

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15 <150> 02028465.9  
<151> 2002-12-19

<160> 88

<170> PatentIn Ver. 2.1

20 <210> 1  
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25 <400> 1  
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30 Pro Phe Val Phe  
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35 <211> 20  
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45 <223> Xaa is D-proline

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1 5 10 15

50 Pro Phe Val Phe  
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Pro Phe Val Phe  
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25 <400> 4  
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1 5 10 15  
30 Pro Phe Val Phe  
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1 5 10 15  
45 Pro Phe Val Phe  
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50 <210> 6  
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55 <220>  
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1 5 10 15

5 Pro Phe Val Phe  
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<210> 7  
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1 5 10 15

20 Pro Phe Val Phe  
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<210> 8  
25 <211> 21  
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35 <223> Xaa is D-Tic

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<222> (18)  
40 <223> Xaa is D-Tic

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1 5 10 15

45 Pro Xaa Phe Val Phe  
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50 <210> 9  
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55 <220>  
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1 5 10 15

5 Pro Phe Val Phe  
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15 <223> Description of Artificial Sequence: VIR-175

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1 5 10 15

20 Pro Phe Val Phe  
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1 5 10 15

35 Pro Phe Val Phe  
20

40 <210> 12  
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45 <220>  
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<222> (10)

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<400> 13

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1 5 10 15

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<210> 14

<211> 20

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<400> 14

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1 5 10 15

Pro Phe Val Phe  
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<210> 15

<211> 20

<212> PRT

<213> Artificial Sequence

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<223> Xaa is D-proline

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1 5 10 15

Pro Phe Val Phe  
20

5 <210> 16  
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15 <400> 16  
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1 5 10 15

20 Pro Phe Val Phe  
20

25 <210> 17  
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1 5 10 15

40 Pro Phe Val Phe  
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45 <210> 18  
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55 <222> (10)  
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<400> 18

Leu Glu Ala Ile Pro Met Ser Ile Pro Xaa Glu Phe Leu Phe Asn Lys  
1 5 10 15

5 Pro Phe Val Phe  
20

10 <210> 19  
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15 <220>  
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20 <400> 19  
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1 5 10 15

25 Pro Phe Val Phe  
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30 <210> 20  
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35 <220>  
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1 5 10 15

45 Pro Phe Val Phe  
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50 <210> 21  
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55 <220>  
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Leu Glu Ala Ile Pro Met Ser Ile Pro Pro Glu Phe Ala Phe Asn Lys  
1 5 10 15

5 Asp Phe Val Phe  
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.10 <210> 22  
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20 <400> 22  
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1 5 10 15

25 Pro Phe Val Phe  
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30 <210> 23  
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40 <223> Xaa is D-proline

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Leu Glu Lys Ile Pro Met Ser Ile Pro Xaa Glu Val Ala Phe Asn Lys  
1 5 10 15

45 Pro Phe Val Phe  
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50 <210> 24  
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5 <220>  
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<222> (13)  
<223> Xaa is cyclohexylalanine

10 <400> 24  
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1 5 10 15  
Pro Phe Val Phe  
15 20

20 <210> 25  
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<223> Xaa is D-proline

35 <220>  
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<222> (12)  
<223> Xaa is 1-naphthylalanine

40 <400> 25  
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1 5 10 15  
Pro Phe Val Phe  
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45 <210> 26  
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50 <220>  
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<222> (12)

<223> Xaa is p-fluorophenylalanine

<400> 26

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1 5 10 15

Pro Phe Val Phe  
20

<210> 27

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15 <213> Artificial Sequence

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<223> Xaa is D-proline

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<222> (13)

<223> Xaa is 4-pyridylalanine

30 <400> 27

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1 5 10 15

Pro Phe Val Phe  
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<210> 28

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40 <212> PRT

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<223> Description of Artificial Sequence: VIR-261

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<223> Xaa is D-proline

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<222> (12)

<223> Xaa is 3,3-diphenylalanine

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<400> 28

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Pro Phe Val Phe  
20

5  
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<222> (13)  
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25  
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1 5 10 15

Pro Phe Val Phe  
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<223> Xaa is L-Tic

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1 5 10 15

55  
Pro Phe Val Phe  
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<210> 31

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15 <222> (13)  
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1 5 10 15  
Pro Phe Val Phe  
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25 <210> 32  
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30 <220>  
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1 5 10 15  
Pro Phe Val Phe  
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5 <223> Xaa ia D-proline  
  
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1 5 10 15  
10 Pro Phe Val Phe  
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30 <222> (17)  
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Xaa Phe Val Phe  
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40 <210> 35  
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1 5 10 15

5 Xaa Phe Val Phe  
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<210> 36

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<213> Artificial Sequence

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15 <223> Description of Artificial Sequence: VIR-272

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1 5 10 15

20 Pro Phe Val Phe  
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30 <223> Description of Artificial Sequence: VIR-273

<400> 37

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1 5 10 15

35 Pro Phe Val Phe  
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<210> 38

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45 <223> Description of Artificial Sequence: VIR-274

<400> 38

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1 5 10 15

Pro Phe Val Phe  
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<210> 39

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5 <223> Description of Artificial Sequence: VIR-280

<400> 39

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1 5 10 15

Pro Phe Val Phe  
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<210> 40

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20 <223> Description of Artificial Sequence: VIR-284

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1 5 10 15

Pro Phe Val Phe  
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<210> 41

<211> 20

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35 <223> Description of Artificial Sequence: VIR-286

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40 Leu Glu Ala Ile Pro Ile Ser Ile Pro Pro Glu Leu Ala Phe Ala Lys  
1 5 10 15

Pro Phe Val Phe  
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<210> 42

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50 <213> Artificial Sequence

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5 Pro Phe Val Phe  
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10 <210> 43  
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15 <220>  
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<223> Xaa is D-proline

25 <400> 43  
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1 5 10 15  
Pro Phe Val Phe  
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30 <210> 44  
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35 <220>  
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40 <220>  
<221> MUTAGEN  
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<223> Xaa is D-proline

45 <400> 44  
Leu Glu Ala Ile Pro Met Gly Ile Pro Xaa Glu Val Phe Phe Gly Lys  
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Pro Phe Val Phe  
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55 <210> 45  
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<220>  
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Leu Glu Ala Ile Pro Met Gly Ile Pro Xaa Glu Val Phe Phe Asn Lys  
1 5 10 15  
10 Pro Phe Val Phe  
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15 <210> 46  
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Pro Phe Val Phe  
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35 <210> 47  
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Pro Phe Val Phe  
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5 <220>  
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10 <223> Xaa is D-proline

<400> 48

Leu Glu Ala Ile Pro Met Gly Ile Pro Xaa Glu Val Trp Phe Asn Lys  
1 5 10 15

15 Pro Phe Val Phe  
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20 <210> 49  
<211> 20  
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25 <220>  
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<400> 49

30 Leu Glu Ala Ile Pro Cys Ser Ile Pro Pro Cys Val Phe Phe Gly Lys  
1 5 10 15

Pro Phe Val Phe  
20

35 <210> 50  
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40 <220>  
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45 Leu Glu Ala Ile Pro Cys Ser Ile Pro Pro Cys Phe Leu Phe Gly Lys  
1 5 10 15

Pro Phe Val Phe  
20

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<210> 51  
<211> 20  
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55 <213> Artificial Sequence

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<400> 51  
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1 5 10 15  
5 Pro Phe Val Phe  
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10 <210> 52  
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15 <220>  
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20 <220>  
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<222> (10)  
<223> Xaa is D-proline

<400> 52  
Leu Glu Ala Ile Pro Cys Ser Ile Pro Xaa Cys Val Gly Phe Gly Lys  
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Pro Phe Val Phe  
20

30 <210> 53  
<211> 20  
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35 <220>  
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<222> (10)  
<223> Xaa is D-proline

45 <400> 53  
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1 5 10 15  
Pro Phe Val Phe  
20

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55 <210> 54  
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5 <223> Xaa is D-proline  
  
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Leu Glu Ala Ile Pro Cys Ser Ile Pro Xaa Cys Phe Ala Phe Asn Lys  
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10 Pro Phe Val Phe  
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15 <210> 55  
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<223> Xaa is D-proline  
  
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Leu Glu Ala Ile Pro Cys Ser Ile Pro Xaa Cys Val Phe Phe Asn Lys  
30 1 5 10 15  
Pro Phe Val Phe  
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35 <210> 56  
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<223> Xaa is D-proline  
  
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50 Leu Glu Ala Ile Pro Cys Ser Ile Pro Xaa Cys Phe Leu Phe Asn Lys  
1 5 10 15  
Pro Phe Val Phe  
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<210> 57  
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<222> (10)  
10 <223> Xaa is D-proline

<400> 57  
Leu Glu Ala Ile Pro Cys Ser Ile Pro Xaa Cys Val Ala Phe Asn Lys  
1 5 10 15  
15 Pro Phe Val Phe  
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20 <210> 58  
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25 <220>  
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30 <222> (10)  
<223> Xaa is D-proline

<400> 58  
Leu Glu Ala Ile Pro Cys Gly Ile Pro Xaa Cys Val Ala Phe Asn Lys  
35 1 5 10 15  
Pro Phe Val Phe  
20

40 <210> 59  
<211> 20  
<212> PRT  
<213> Artificial Sequence

45 <220>  
<223> Description of Artificial Sequence: VIR-356

<400> 59  
50 Leu Glu Ala Ile Pro Cys Ser Ile Pro Pro Cys Phe Ala Phe Asn Lys  
1 5 10 15  
Asp Phe Val Phe  
20

55 <210> 60  
<211> 20

<212> PRT  
<213> Artificial Sequence

5 <220>  
<223> Description of Artificial Sequence: VIR-357

<220>  
<221> MUTAGEN  
<222> (10)  
10 <223> Xaa is D-proline

<400> 60  
Leu Glu Asp Ile Pro Cys Ser Ile Pro Xaa Cys Val Ala Phe Asn Lys  
1 5 10 15  
15 Pro Phe Val Phe  
20

20 <210> 61  
<211> 20  
<212> PRT  
<213> Artificial Sequence

25 <220>  
<223> Description of Artificial Sequence: VIR-358

<220>  
<221> MUTAGEN  
30 <222> (10)  
<223> Xaa is D-proline

<400> 61  
Leu Glu Lys Ile Pro Cys Ser Ile Pro Xaa Cys Val Ala Phe Asn Lys  
35 1 5 10 15  
Pro Phe Val Phe  
20

40 <210> 62  
<211> 21  
<212> PRT  
<213> Artificial Sequence

45 <220>  
<223> Description of Artificial Sequence: VIR-376

<220>  
<221> MUTAGEN  
50 <222> (10)  
<223> Xaa is D-proline

<400> 62  
55 Leu Glu Ala Ile Pro Met Ser Ile Pro Xaa Glu Phe Leu Phe Gly Lys  
1 5 10 15  
Pro Ala Phe Val Phe

20

5     <210> 63  
      <211> 21  
      <212> PRT  
      <213> Artificial Sequence  
  
      <220>  
10    <223> Description of Artificial Sequence: VIR-377  
  
      <220>  
      <221> MUTAGEN  
      <222> (10)  
15    <223> Xaa is D-proline  
  
      <400> 63  
      Leu Glu Ala Ile Pro Met Ser Ile Pro Xaa Glu Phe Leu Phe Gly Lys  
          1                  5                  10                  15  
20    Pro Gly Phe Val Phe  
                  20  
  
25    <210> 64  
      <211> 21  
      <212> PRT  
      <213> Artificial Sequence  
  
30    <220>  
      <223> Description of Artificial Sequence: VIR-380  
  
      <220>  
      <221> MUTAGEN  
35    <222> (10)  
      <223> Xaa is D-proline  
  
      <400> 64  
40    Leu Glu Ala Ile Pro Met Ser Ile Pro Xaa Glu Phe Leu Phe Gly Lys  
          1                  5                  10                  15  
      Pro Phe Phe Val Phe  
                  20  
  
45    <210> 65  
      <211> 21  
      <212> PRT  
      <213> Artificial Sequence  
50    <220>  
      <223> Description of Artificial Sequence: VIR-384  
  
      <220>  
55    <221> MUTAGEN  
      <222> (10)  
      <223> Xaa is D-proline

<400> 65

Leu Glu Ala Ile Pro Met Ser Ile Pro Xaa Glu Phe Leu Phe Gly Lys  
1 5 10 15

5 Pro Glu Phe Val Phe  
20

<210> 66

10 <211> 20

<212> PRT

<213> Artificial Sequence

<220>

15 <223> Description of Artificial Sequence: VIR-396

<220>

<221> MUTAGEN

<222> (10)

20 <223> Xaa is D-proline

<400> 66

Leu Glu Ala Ile Pro Met Ser Ala Pro Xaa Glu Phe Leu Phe Gly Lys  
1 5 10 15

25 Pro Phe Val Phe  
20

<210> 67

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

35 <223> Description of Artificial Sequence: VIR-400

<220>

<221> MUTAGEN

40 <222> (10)

<223> Xaa is D-proline

<400> 67

45 Leu Glu Ala Ile Pro Met Ser Phe Pro Xaa Glu Phe Leu Phe Gly Lys  
1 5 10 15

Pro Phe Val Phe  
20

50

<210> 68

<211> 20

<212> PRT

<213> Artificial Sequence

55

<220>

<223> Description of Artificial Sequence: VIR-416



<220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline  
5  
<400> 68  
Leu Glu Ala Ile Pro Met Gly Ile Pro Xaa Glu Phe Leu Phe Gly Lys  
1 5 10 15  
10 Pro Phe Val Phe  
20  
15 <210> 69  
<211> 20  
<212> PRT  
<213> Artificial Sequence  
20 <220>  
<223> Description of Artificial Sequence: VIR-418  
25 <220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline  
30 <400> 69  
Leu Glu Lys Ile Pro Met Gly Ile Pro Xaa Glu Phe Leu Phe Gly Lys  
1 5 10 15  
30 Pro Phe Val Phe  
20  
35 <210> 70  
<211> 21  
<212> PRT  
<213> Artificial Sequence  
40 <220>  
<223> Description of Artificial Sequence: VIR-445  
45 <220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline  
50 <220>  
<221> MUTAGEN  
<222> (13)  
<223> Xaa is D-Tic  
55 <400> 70  
Leu Glu Ala Ile Pro Ile Ser Ile Pro Xaa Pro Glu Val Xaa Phe Asn  
1 5 10 15  
Lys Pro Phe Val Phe  
20

<210> 71  
<211> 20  
5 <212> PRT  
<213> Artificial Sequence  
<220>  
<223> Description of Artificial Sequence: VIR-447  
10 <220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline  
15 <220>  
<221> MUTAGEN  
<222> (17)  
<223> Xaa is L-Tic  
20 <400> 71  
Leu Glu Ala Ile Pro Ile Ser Ile Pro Xaa Glu Val Ala Phe Asn Lys  
1 5 10 15  
25 Xaa Phe Val Phe  
20  
<210> 72  
30 <211> 20  
<212> PRT  
<213> Artificial Sequence  
<220>  
35 <223> Description of Artificial Sequence: VIR-448  
<220>  
<221> MUTAGEN  
<222> (10)  
40 <223> Xaa is D-proline  
<220>  
<221> MUTAGEN  
<222> (13)  
45 <223> Xaa is D-Tic  
<400> 72  
Leu Glu Ala Ile Pro Met Gly Ile Pro Xaa Glu Val Xaa Phe Asn Lys  
1 5 10 15  
50 Pro Phe Val Phe  
20  
55 <210> 73  
<211> 20  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: VIR-449

5 <220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline

10 <220>  
<221> MUTAGEN  
<222> (13)  
<223> Xaa is L-Tic

15 <400> 73  
Leu Glu Ala Ile Pro Met Gly Ile Pro Xaa Glu Val Xaa Phe Asn Lys  
1 5 10 15  
Pro Phe Val Phe  
20 20

<210> 74  
<211> 20  
25 <212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: VIR-452

30 <220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline

35 <220>  
<221> MUTAGEN  
<222> (13)  
<223> Xaa is L-Tic

40 <400> 74  
Leu Glu Asp Ile Pro Met Ser Ile Pro Xaa Glu Val Xaa Phe Asn Lys  
1 5 10 15  
Pro Phe Val Phe  
45 20

<210> 75  
50 <211> 20  
<212> PRT  
<213> Artificial Sequence

<220>  
55 <223> Description of Artificial Sequence: VIR-454  
  
<220>  
<221> MUTAGEN

<222> (10)  
<223> Xaa is D-proline

5 <220>  
<221> MUTAGEN  
<222> (13)  
<223> Xaa is D-Tic

10 <400> 75  
Leu Glu Lys Ile Pro Met Ser Ile Pro Xaa Glu Val Xaa Phe Asn Lys  
1 5 10 15

Pro Phe Val Phe  
20

15

<210> 76  
<211> 20  
<212> PRT  
20 <213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: VIR-455

25 <220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline

30 <220>  
<221> MUTAGEN  
<222> (13)  
<223> Xaa is L-Tic

35 <400> 76  
Leu Glu Lys Ile Pro Met Ser Ile Pro Xaa Glu Val Xaa Phe Asn Lys  
1 5 10 15

Pro Phe Val Phe  
20

40

<210> 77  
<211> 20  
45 <212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: VIR-479

50 <220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline

55 <400> 77  
Leu Glu Asp Ile Pro Ile Gly Ile Pro Xaa Glu Phe Leu Phe Asn Lys  
1 5 10 15

Pro Phe Val Phe  
20

5  
<210> 78  
<211> 20  
<212> PRT  
<213> Artificial Sequence

10  
<220>  
<223> Description of Artificial Sequence: VIR-483

15  
<220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline

20  
<220>  
<221> MUTAGEN  
<222> (13)  
<223> Xaa is D-Tic

25  
<400> 78  
Leu Glu Lys Ile Pro Ile Gly Ile Pro Xaa Glu Val Xaa Phe Asn Lys  
1 5 10 15

Pro Phe Val Phe  
20

30  
<210> 79  
<211> 20  
<212> PRT  
<213> Artificial Sequence

35  
<220>  
<223> Description of Artificial Sequence: VIR-484

40  
<220>  
<221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline

45  
<220>  
<221> MUTAGEN  
<222> (13)  
<223> Xaa is L-Tic

50  
<400> 79  
Leu Glu Lys Ile Pro Ile Gly Ile Pro Xaa Glu Val Xaa Phe Asn Lys  
1 5 10 15

55  
Pro Phe Val Phe  
20

<210> 80

<211> 20  
<212> PRT  
<213> Artificial Sequence

5 <220>  
<223> Description of Artificial Sequence: VIR-485

<220>  
<221> MUTAGEN  
10 <222> (10)  
<223> Xaa is D-proline

<220>  
<221> MUTAGEN  
15 <222> (17)  
<223> Xaa is L-Tic

<400> 80  
Leu Glu Lys Ile Pro Ile Gly Ile Pro Xaa Glu Val Ala Phe Asn Lys  
20 1 5 10 15

Xaa Phe Val Phe  
20

25 <210> 81  
<211> 20  
<212> PRT  
<213> Artificial Sequence

30 <220>  
<223> Description of Artificial Sequence: VIR-487

<220>  
35 <221> MUTAGEN  
<222> (10)  
<223> Xaa is D-proline

<220>  
40 <221> MUTAGEN  
<222> (13)  
<223> Xaa is L-Tic

<400> 81  
45 Leu Glu Asp Ile Pro Ile Gly Ile Pro Xaa Glu Val Xaa Phe Asn Lys  
1 5 10 15

Pro Phe Val Phe  
20

50 <210> 82  
<211> 20  
<212> PRT  
55 <213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: VIR-488

<220>  
<221> MUTAGEN  
<222> (10)  
5 <223> Xaa is D-proline

<220>  
<221> MUTAGEN  
<222> (17)  
10 <223> Xaa is L-Tic

<400> 82  
Leu Glu Asp Ile Pro Ile Gly Ile Pro Xaa Glu Val Ala Phe Asn Lys  
1 5 10 15  
15 Xaa Phe Val Phe  
20

20 <210> 83  
<211> 20  
<212> PRT  
<213> Artificial Sequence

25 <220>  
<223> Description of Artificial Sequence: VIR-512

<220>  
<221> MUTAGEN  
30 <222> (1)  
<223> Xaa is N-methyl-leucine

<400> 83  
Xaa Glu Ala Ile Pro Met Ser Ile Pro Pro Glu Phe Leu Phe Gly Lys  
35 1 5 10 15  
Pro Phe Val Phe  
20

40 <210> 84  
<211> 20  
<212> PRT  
<213> Artificial Sequence

45 <220>  
<223> Description of Artificial Sequence: VIR-568

<400> 84  
50 Leu Glu Ala Ile Pro Met Ser Cys Pro Pro Glu Phe Cys Phe Gly Lys  
1 5 10 15  
Pro Phe Val Phe  
20

55 <210> 85  
<211> 20

<212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 5 <223> Description of Artificial Sequence: VIR-570  
  
 <400> 85  
 Leu Glu Ala Ile Pro Cys Ser Ile Pro Pro Glu Cys Leu Phe Gly Lys  
       1                  5                  10                  15  
 10 Pro Phe Val Phe  
                   20  
  
 15 <210> 86  
       <211> 20  
       <212> PRT  
       <213> Artificial Sequence  
  
 20 <220>  
       <223> Description of Artificial Sequence: VIR-576  
  
       <220>  
       <221> DISULFID  
 25 <222> (6)  
       <223> An intermolecular disulfide bridge forms between  
               the cysteine residues of two VIR-576, giving rise  
               to a homo-dimer.  
  
 30 <400> 86  
 Leu Glu Ala Ile Pro Cys Ser Ile Pro Pro Glu Phe Leu Phe Gly Lys  
       1                  5                  10                  15  
 35 Pro Phe Val Phe  
                   20  
  
       <210> 87  
       <211> 20  
 40 <212> PRT  
       <213> Artificial Sequence  
  
       <220>  
       <223> Description of Artificial Sequence: VIR-580  
 45  
       <220>  
       <221> BINDING  
       <222> (20)  
       <223> Mini-PEG rest is bound to phenylalanine; Mini-PEG  
 50 =  
           -NH-(CH<sub>2</sub>)<sub>2</sub>-O-(CH<sub>2</sub>)<sub>2</sub>-O-CH<sub>2</sub>-CO-NH-(CH<sub>2</sub>)<sub>2</sub>-O-(CH<sub>2</sub>)<sub>2</sub>-O-  
           CH<sub>2</sub>-CO-NH<sub>2</sub>  
  
       <400> 87  
 55 Leu Glu Ala Ile Pro Met Ser Ile Pro Pro Glu Phe Leu Phe Gly Lys  
       1                  5                  10                  15  
  
 Pro Phe Val Phe



20

5 <210> 88  
<211> 20  
<212> PRT  
<213> Artificial Sequence  
  
10 <220>  
<223> Description of Artificial Sequence: VIR-590  
  
<400> 88  
Leu Glu Ala Ile Pro Met Lys Ile Pro Pro Glu Phe Leu Phe Gly Lys  
1 5 10 15  
15 Pro Phe Val Phe  
20  
20